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Rule "Oracle JRE 7 Update 51 (64-bit) or higher is required" failed. This computer does not have the Oracle Java SE Runtime Environment is software provided by a third party. I enjoy spending time with my daughter almost every single day. It keeps me busy
at home and most importantly, some quality time with her allows me to relax after a long day at work. But there one thing that has caught my attention every single thing that she sees. With every new release of SQL Server, I sort of get into the same mode or feeling. I become a child as
there is so much to explore and learn. I heard about new a lot of new features in SQL Server 2016. So, I downloaded media from Microsoft site and tried installing on my VM. I have selected all the features and moved forward. This is common because I don't want to miss out on anything that gets introduced in the new release. Later, during the
 installation process, I faced an error and I was not able to proceed. Here is the Rule check failure. I was wondering what part of SQL Server required us to have Oracle JRE. If I click on hyperlink on failed, I get below: Here is the text of the message: ——————— Rule Check Result —————
higher is required" failed. This computer does not have the Oracle Java SE Runtime Environment Version 7 Update 51 (64-bit) or higher installed. The Oracle Java SE Runtime Environment is software provided by a third party. Microsoft grants you no rights for such third-party software. You are responsible for and must separately locate, read and
 accept applicable third-party license terms. To continue, download the Oracle SE Java Runtime Environment from . —————— OK —————— NOTE: On little exploring, found that you can skip this error if you want to use
PolyBase then to solve above error, you can follow below steps: Then click on "Accept License Agreement" as shown below Once accepted, I have downloaded the one which says Windows x64 because my operating system is windows 64 bit. Note that version (8 update 45) will change in future but steps would remain same. After installing, I was able
to move forward and install SQL Server 2016. Hope this helps those trying to install SQL Server 2016 with Polybase features. I am sure you will be able to solve this. Reference: Pinal Dave () Java Standard Edition (SE) is a free software bundle that provides the Java Runtime Environment and the libraries and components you need to display a wide
range of programs and Web content on 32-bit Windows PCs. It includes the Java plug-in for Web browsers and Java Web Start for deploying standalone apps written in Java over the Internet or other networks. Java SE Version 7 Update 55 addresses 37 security vulnerabilities. Pros You probably need it: Lots of Web sites and programs depend on Java
to run. Up-to-date Java libraries and components keep your content fresh. Now with JavaFX: Java version 7 Update 55 includes JavaFX, the latest software platform and the new standard for Java-rich Internet applications (RIAs). Cons Security issues: Some computer security experts have raised warning flags about vulnerabilities in Java and its
components. Java 7.55 addresses many security issues, but staying informed will help you stay safe. What's up with 8? A major update to Java SE, version 8, has also been released. Which version is right for you depends on your system, online habits, and other factors. Bottom Line Java SE Version 7 Update 55 installed easily and seamlessly in our
system. Most of what Java does only becomes apparent when it's missing or disabled, so keep your installation up to date. List of versions of the Java programming language The Java language to the standard library. Since J2SE 1.4, the evolution of
the Java language has been governed by the Java Community Process (JCP), which uses Java Specification Requests (JSRs) to propose and specification (JLS); changes to the JLS are managed under JSR 901. In addition to the language changes, other
changes have been made to the Java Class Library over the years, which has grown from a few hundred classes in JDK 1.0 to over three thousand in J2SE 5. Entire new APIs, such as Swing and Java2D, have been introduced, and many of the original JDK 1.0 classes and methods have been deprecated. Some programs allow conversion of Java
programs from one version of the Java 8 LTS, where Oracle Java 8 LTS, where Oracle Java 8 LTS, where Oracle Premier Support to 1.4) (see Java backporting tools). Regarding Oracle Java 8 LTS, where Oracle Premier Support Roadmap,[1] version 11 is the currently supported long-term support. Java 8
LTS last free software public update for commercial use was released by Oracle in January 2019, while Oracle continues to release no-cost public Java 10 a previously supported rapid release version, had its support ended in September 2018 the same date support for Java 11 began
Java 7 is no longer publicly supported. For Java 11, long-term support will not be provided by Oracle for the public; instead, the broader OpenJDK community, as AdoptOpenJDK or others, is expected to perform the work.[3] Java 16 General Availability occurred on March 16, 2021, with Java 17 now also Rampdown Phase Two,[4][5] and Java 18 is in
development. Version Releasedate End of FreePublic Updates[1][6][7][8] ExtendedSupport Until Old version, no longer maintained: JDK 1.1 February 1997? Old version, no longer maintained: JDK 1.1 February 1997? Old version, no longer maintained: JDK 1.2 December 1998? Old version, no longer maintained: JDK 1.1 February 1997? Old version, no longer maintained: JDK 1.2 December 1998? Old version, no longer maintained: JDK 1.3 December 1998? Old version, no longer maintained: JDK 1.3 December 1998? Old version, no longer maintained: JDK 1.3 December 1998? Old version, no longer maintained: JDK 1.3 December 1998? Old version, no longer maintained: JDK 1.3 December 1998? Old version, no longer maintained: JDK 1.4 December 1998? Old version, no longer maintained: JDK 1.5 December 1998? Old version, no longer maintained: JDK 1.5 December 1998? Old version, no longer maintained: JDK 1.5 December 1998? Old version, no longer maintained: JDK 1.5 December 1998? Old version, no longer maintained: JDK 1.5 December 1998? Old version, no longer maintained: JDK 1.5 December 1998? Old version, no longer maintained: JDK 1.5 December 1998? Old version, no longer maintained: JDK 1.5 December 1998? Old version, no longer maintained: JDK 1.5 December 1998? Old version, no longer maintained: JDK 1.5 December 1998? Old version, no longer maintained: JDK 1.5 December 1998? Old version, no longer maintained: JDK 1.5 December 1998? Old version, no longer maintained: JDK 1.5 December 1998? Old version, no longer maintained: JDK 1.5 December 1998? Old version, no longer maintained: JDK 1.5 December 1998? Old version, no longer maintained: JDK 1.5 December 1998? Old version, no longer maintained: JDK 1.5 December 1998? Old version, no longer maintained: JDK 1.5 December 1998? Old version, no longer maintained: JDK 1.5 December 1998? Old version, no longer maintained: JDK 1.5 December 1998? Old version, no longer maintained: JDK 1.5 December 1998? Old version, no longer maintained: JDK 1.5 December 1998? Old version, no longer maintained: JDK 
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Platform Core[9] Old version, no longer maintained: Java SE 7 July 2011 April 2015 July 2022 Older version, yet still maintained: Java SE 8 (LTS) March 2014 January 2019 for Oracle (commercial) December 2030 for AzulAt least May 2026 for AdoptOpenJDKAt least May 2026 for Amazon Corretto December 2030 for Oracle (non-commercial) December 2030 for AzulAt least May 2026 for AdoptOpenJDKAt least May 2026 for Amazon Corretto December 2030 for Oracle (non-commercial) December 2030 for AzulAt least May 2026 for AdoptOpenJDKAt least May 2026 for Amazon Corretto December 2030 for Oracle (non-commercial) December 2030 fo
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2027 for Amazon CorrettoAt least October 2024 for Microsoft[10][11] September 2026 for OpenJDK N/A Old version, no longer maintained: Java SE 13 September 2019 March 2020 for OpenJDK N/A Old version, no longer maintained: Java SE 13 September 2019 for OpenJDK N/A Old version, no longer maintained: Java SE 14
March 2020 September 2020 for OpenJDK N/A Old version, no longer maintained: Java SE 15 September 2021 for OpenJDKMarch 2021 for OpenJDK N/A Future release: Java SE 17 (LTS) September 2021 September 2021 for OpenJDKMarch 2021 for OpenJDKMarch 2021 for OpenJDK N/A Future release: Java SE 17 (LTS) September 2021 September 2021 for OpenJDKMarch 2021 for OpenJDKMarch 2021 for OpenJDK N/A Future release: Java SE 17 (LTS) September 2021 for OpenJDKMarch 2021 for O
Microsoft September 2029 or laterSeptember 2021 for Azul Platform Prime Future release: Java SE 18 March 2022 September 2021 for OpenJDK N/A Legend: Old versionOlder version, still maintainedLatest versionLatest preview versionFuture release History In September 2017, Mark Reinhold, chief Architect of the Java Platform, proposed to
change the release train to "one feature release every six months" rather than the current two-year schedule, [12][13] and later the proposal took effect. Versions 1.0 1.1 1.2 1.3 1.4 5.0 6 7 8 9 10 11 12 13 14 15 16 17 18 JDK 1.0 JDK 1.0 Released January 23, 1996; 25 years ago (1996-01-23) The first version was released on January 23, 1996. [14][15]
The first stable version, JDK 1.0.2, is called Java 1.[15] JDK 1.1 JDK 1.1ReleasedFebruary 19, 1997; 24 years ago (1997-02-19) Major additions in the release on February 19, 1997 included:[16] an extensive retooling of the AWT event model inner classes added to the language JavaBeans JDBC RMI reflection which supported Introspection only, no
 modification at runtime was possible. (The ability to modify objects reflectively was added in J2SE 1.2, by introducing the AccessibleObject class and its subclasses such as the Field class.) JIT (Just In Time) compiler on Microsoft Windows platforms, produced for JavaSoft by Symantec Internationalization and Unicode support originating from
Taligent[17] J2SE 1.2 J2SE 1.2 Codename Playground Released December 8, 1998; 22 years ago (1998-12-08) Codename Playground The release on December 8, 1998 and subsequent releases through J2SE 5.0 were rebranded retrospectively Java 2 and the version name "J2SE" (Java 2 Platform, Standard Edition) replaced JDK to distinguish the base
platform from J2EE (Java 2 Platform, Enterprise Edition) and J2ME (Java 2 Platform, Micro Edition). This was a very significant release of Java as it tripled the size of the Java platform to 1520 classes in 59 packages. Major additions included:[18] strictfp keyword the Swing graphical API was integrated into the core classes Sun's JVM was equipped
with a JIT compiler for the first time Java plug-in Java IDL, an IDL implementation for CORBA interoperability Collections framework J2SE 1.3 Codename Kestrel The most notable changes in the May 8, 2000 release were:[19][20] HotSpot JVM included (the HotSpot JVM was
first released in April 1999 for the J2SE 1.2 JVM) RMI was modified to support optional compatibility with CORBA Java Naming and Directory Interface (JNDI) included in core libraries (previously available as an extension) Java Platform Debugger Architecture (JPDA) JavaSound Synthetic proxy classes J2SE 1.4 J2SE
1.4CodenameMerlinReleasedFebruary 6, 2002; 19 years ago (2002-02-06)End of public supportCotober 2008 (2008-10)End of paid supportFebruary 2013 (2013-02) Codename Merlin The February 2013 (2013-02) End of public supportFebruary 2013 (2013-02) End of public supportFebruary 6, 2002 release was the first release of the Java platform developed under the Java platform developed under the Java Community Process as JSR 59. Major changes included:[21][22]
Language changes assert keyword (specified in JSR 41) Library improvements Regular expressions Exception to encapsulate original lower-level exception to encaps
JSR 47) Image I/O API for reading and writing images in formats like JPEG and PNG Integrated XML parser and XSLT processor (JAXP) (specified in JSR 5a) Integrated security and cryptography extensions (JCE, JSSE, JAAS) Java Web Start included (Java Web Start was first released in March 2001 for J2SE 1.3) (specified in JSR 5a)
Preferences API (java.util.prefs) Public support and security updates for Java 1.4 ended in October 2008. Paid security updates for Oracle customers ended in February 2013.[23] J2SE 5.0 J2SE 5
supportApril 2015 (2015-04) Codename Tiger The release on September 30, 2004 was originally numbered 1.5, which is still used as the internal version number. The number was changed to "better reflect the level of maturity, stability, scalability and security of the J2SE".[24] This version was developed under JSR 176. J2SE 5.0 entered its end-of-
public-updates period on April 8, 2008; updates are no longer available to the public as of November 3, 2009. Updates were available to paid Oracle customers until May 2015.[1] Tiger added a number of significant new language features: [25][26] Generics: provides compile-time (static) type safety for collections and eliminates the need for most
typecasts (type conversion) (specified by JSR 14) Metadata: also called annotations; allows language constructs such as classes and methods to be tagged with additional data, which can then be processed by metadata-aware utilities (specified by JSR 175) Autoboxing/unboxing: automatic conversions between primitive types (such as int) and primitive
 wrapper classes (such as Integer) (specified by JSR 201) Enumerations: the enum keyword creates a typesafe, ordered list of values (such as Day.MONDAY, Day.TUESDAY, etc.); previously this could only be achieved by non-typesafe constant integers or manually constructed classes (typesafe enum pattern) (specified by JSR 201) Varargs: the last
parameter of a method can now be declared using a type name followed by three dots (e.g. void drawtext(String... lines)); in the calling code any number of parameters of that type can be used and they are then placed in an array to be passed to the method, or alternatively the calling code can pass an array of that type Enhanced for each loop: the for
loop syntax is extended with special syntax for iterating over each member of either an array or any Iterable, such as the standard Collection classes (specified by JSR 201) Improved semantics of execution for multi-threaded Java programs; the new Java memory model addresses issues of complexity, effectiveness, and performance of previous
specifications[27] Static imports There were also the following improvements to the standard libraries: Automatic stub generation for RMI objects Swing: New skinnable look and feel, called synth The concurrency utilities in package java.util.concurrent[28] Scanner class for parsing data from various input streams and buffers Java 5 is the last
release of Java to officially support Microsoft Windows 98 and Windows ME,[29] while Windows Vista was the newest version of Windows 12SE 5 was supported on prior to Java 5 Update 5 (1.5.0_05) is the last release of Java to work on Windows 95 (with Internet Explorer 5.5 installed) and Windows 12SE 5 was supported on prior to Java 5 Update 5 (1.5.0_05) is the last release of Java to work on Windows 95 (with Internet Explorer 5.5 installed) and Windows 12SE 5 was supported on prior to Java 5 Update 5 (1.5.0_05) is the last release of Java to work on Windows 95 (with Internet Explorer 5.5 installed) and Windows 12SE 5 was supported on prior to Java 5 Update 5 (1.5.0_05) is the last release of Java to work on Windows 95 (with Internet Explorer 5.5 installed) and Windows 12SE 5 was supported on prior to Java 5 Update 5 (1.5.0_05) is the last release of Java 5 Update 5 (1.5.0_05) is the last release of Java 6 Update 5 (1.5.0_05) is the last release of Java 6 Update 5 (1.5.0_05) is the last release of Java 6 Update 5 (1.5.0_05) is the last release of Java 6 Update 5 (1.5.0_05) is the last release of Java 7 Update 5 (1.5.0_05) is the last release of Java 7 Update 5 (1.5.0_05) is the last release of Java 7 Update 5 (1.5.0_05) is the last release of Java 8 Update 5 (1.5.0_05) is the last release of Java 8 Update 5 (1.5.0_05) is the last release of Java 8 Update 5 (1.5.0_05) is the last release of Java 8 Update 5 (1.5.0_05) is the last release of Java 8 Update 5 (1.5.0_05) is the last release of Java 8 Update 5 (1.5.0_05) is the last release of Java 8 Update 5 (1.5.0_05) is the last release of Java 8 Update 5 (1.5.0_05) is the last release of Java 8 Update 5 (1.5.0_05) is the last release of Java 8 Update 5 (1.5.0_05) is the last release of Java 8 Update 5 (1.5.0_05) is the last release of Java 8 Update 5 (1.5.0_05) is the last release of Java 8 Update 5 (1.5.0_05) is the last release of Java 8 Update 5 (1.5.0_05) is the last release 1 Update 5 (1.5.0_05) is the last release 1 Update 5 (1.5.0_05) is the last release 1 Upd
NT 4.0.[30] Java 5 was first available on Apple Mac OS X 10.4 (Tiger)[31] and was the default version of Java installed on Apple Mac OS X 10.5 (Leopard). Public support and security updates for Oracle customers ended in April 2015. Versioning change This version introduced a new
versioning system for the Java language, although the old version, while "1.5.0" are used to identify this release of the Java 2 Platform Standard Edition. Version "5.0" is the product version, while "1.5.0" is the developer version. The number "5.0" is used to better reflect
the level of maturity, stability, scalability and security of the J2SE.—Version 1.5.0 or 5.0?[32] This correspondence continued through later releases (Java 5 updates Release (Java 5 updates Release Release
primitive types, enhanced for loop, enumerated types, static import, formatted I/O, varargs, and concurrency utilities. Improved startup time and memory footprint. Sharing of read-only data between multiple running JVMs. Remote monitoring and management. A new JVM profiling API. Programmatic generation of stack traces. Support for XML 1.1
with Namespaces, XML Schema, SAX 2.0.2, DOM Level 3, and XSLT with a fast XSLTC compiler. Unicode 4.0 support. Java SE 5 Update 2 2005-03-16 A few crashes were fixed. The program is now compiled with better optimization. Calendar bugfixes and other bugfixes were made. Java SE 5
Update 3 2005-05-03 This release fixes several bugs, including crashes of the Linux Mozilla plugin. Java SE 5 Update 4 2005-07-04 With the release, J2SE support for Windows 64-bit mode machines with Windows Server 2003 x64 Editions. Java SE 5
Update 5 2005-09-18 Several bugs were fixed and performance enhancements were made. Last release for Windows 95 and Windows NT 4.0. Java SE 5 Update 6 2005-12-07 Prior to this update, an applet or application could specify the version of the JRE on which it would run. This has changed. All applets are executed with the latest JRE version.
Java SE 5 Update 7 2006-05-29 Several bugs were fixed and performance enhancements were made. Java SE 5 Update 8 2006-08-13 Several bugs were fixed and performance enhancements were made. Java SE 5 Update 9 2006-11-12 This release fixes several minor regressions. Java SE 5 Update 10 2006-12-22 An implementation of the epoll I/O
event notification facility, supported by Linux 2.6, was added. Many bugs were fixed and performance enhancements were made. Java SE 5 Update 12 2007-06-11 Java SE 5 Update 13 2007-10-05 Multiple security vulnerabilities in Java Web Start relating to local file access were fixed. A
security vulnerability in the JRE allowing network access restrictions to be circumvented was fixed. Several other security issues and minor bugs were fixed, along with several other bugs. New root certificates from AOL, DigiCert, and
TrustCenter are now included. Java SE 5 Update 16 2008-07-23 This release fixes several security flaws, such as DoS vulnerabilities, buffer overflows, and other bugs which could lead to crashes or which would give applets access to certain system resources. These vulnerabilities were located in Java Web Start, in the Java Management Extensions
  (JMX) Management Agent, and in the functions for handling XML data. Java SE 5 Update 17 2008-12-03 The UTF-8 charset implementation was updated to handle the non-shortest form of UTF-8 byte sequences, introducing an incompatibility from previous releases. New root certificates were added. Many bugs were fixed. Java SE 5 Update 18 2009-
 03-25 Several security issues were resolved. The behavior of the JNDI feature to store and retrieve Java objects in an LDAP directory was slightly modified. Five new root certificates were added. Many bugs were fixed. Java SE 5 Update 19 2009-05-29 Support was added for several system configurations. Service Tag support was added. Many bugs
 were fixed, including several crashes and memory leaks. Java SE 5 Update 20 2009-08-06 Several security vulnerabilities were resolved, such as potential system access by untrusted applets, and integer overflows in image processing and in Unpack200. Several new root certificates were added. Many other minor bugs were fixed. Java SE 5 Update 21
2009-09-09 Many minor bugs were fixed. Java SE 5 Update 22 2009-11-04 This release marks the End of Service Life (EOSL) for Java 5, and is its final public version. Several other bugs were fixed. Furthermore, two new root certificates were
added. Java SE 5 Update 23 2010-01-13 Not available publicly, only available through the Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 32 security fixes. Java SE 5 Update 24 2010-04-15 Not available through the Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 2
security fixes. Java SE 5 Update 25 2010-07-07 Not available publicly, only available through the Java SE Support program and in Solaris 10's Recommended Patchset
Cluster; 2 security fixes. Java SE 5 Update 27 2010-12-08 Not available publicly, only available through the Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 22 security fixes. Java SE 5 Update 28 2011-02-15 Not available publicly, only available through the Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 22 security fixes. Java SE 5 Update 28 2011-02-15 Not available publicly, only available through the Java SE 5 Update 28 2011-02-15 Not available publicly, only available through the Java SE 5 Update 28 2011-02-15 Not available publicly, only available through the Java SE 5 Update 28 2011-02-15 Not available publicly, only available through the Java SE 5 Update 28 2011-02-15 Not available publicly, only available through the Java SE 5 Update 28 2011-02-15 Not available publicly, only available through the Java SE 5 Update 28 2011-02-15 Not available publicly, only available through the Java SE 5 Update 28 2011-02-15 Not available publicly, only available through the Java SE 5 Update 28 2011-02-15 Not available publicly, only available publicly, only available publicly, only available through the Java SE 5 Update 28 2011-02-15 Not available publicly, only available publicly, only available through the Java SE 5 Update 28 2011-02-15 Not available publicly, only available publ
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 Recommended Patchset Cluster; 1 security fix. Java SE 5 Update 31 2011-08-16 Not available publicly, only available through the Java SE Support program and in Solaris
10's Recommended Patchset Cluster; 20 security fixes [34] Java SE 5 Update 33 2011-12-12 Not available publicly, only available through the Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 21 security fixes. Java SE 5 Update 34 2012-02-14 Not available publicly, only available through the Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 21 security fixes.
in Solaris 10's Recommended Patchset Cluster; 14 security fixes SE 5 Update 35 2012-04-26 Not available through the Java SE 5 Update 36 2012-06-12 Not available publicly, only available through the Java SE Support
program and in Solaris 10's Recommended Patchset Cluster; 14 security fixes[36] Java SE 5 Update 38 2012-08-14 Not available publicly, only available through the Java SE 5 Update 39 2013-02-19 Not available publicly, only available through the Java SE 5 Update 38 2012-08-14 Not available publicly, only available through the Java SE 5 Update 38 2012-08-14 Not available publicly, only available through the Java SE 5 Update 39 2013-02-19 Not available publicly, only available through the Java SE 5 Update 39 2013-02-19 Not available publicly, only available through the Java SE 5 Update 39 2013-02-19 Not available publicly, only available publicly, only available through the Java SE 5 Update 39 2013-02-19 Not available publicly, only available through the Java SE 5 Update 39 2013-02-19 Not available publicly, only available through the Java SE 5 Update 39 2013-02-19 Not available publicly, only available through the Java SE 5 Update 39 2013-02-19 Not available publicly, only available through the Java SE 5 Update 39 2013-02-19 Not available publicly, only available through the Java SE 5 Update 39 2013-02-19 Not available publicly, only available through the Java SE 5 Update 39 2013-02-19 Not available publicly, only available through the Java SE 5 Update 39 2013-02-19 Not available publicly, only available through the Java SE 5 Update 39 2013-02-19 Not available publicly, only a
SE Support program and in Solaris 10's Recommended Patchset Cluster; 50 security fixes[38] Java SE 5 Update 40 2013-02-19 Not available publicly, only available publicly, 
through the Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 2 security fixes[40] Java SE 5 Update 51 2013-06-18 Not available publicly, only available publicly, available publicly, only available publicly, only available publicly, available publ
only available through the Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 40 security fixes[42] Java SE 5 Update 55 2013-10-15 Not available through the Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 51 security fixes[42] Java SE 5 Update 61 2014-01-14 Not
available publicly, only available through the Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 36 security fixes[45] Java SE 5 Update 65 2014-04-15 Not available through the Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 37 security fixes[45] Java SE 5 Update 71
2014-07-15 Not available publicly, only available through the Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 25 security fixes[47] Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 25 security fixes[47] Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 25 security fixes[47] Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 26 security fixes[47] Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 27 security fixes[47] Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 28 security fixes[47] Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 29 security fixes[47] Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 20 security fixes[47] Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 20 security fixes[47] Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 20 security fixes[47] Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 20 security fixes[47] Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 20 security fixes[47] Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 20 security fixes[47] Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 20 security fixes[47] Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 20 security fixes[47] Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 20 security fixes[47] Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 20 security fixes[47] Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 20 security fixes[47] Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 20 security fixes[47] Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 20 security fixes[47] Java SE Support program and in Solaris 10's Recommended Patchset
5 Update 81 2015-01-21 Not available publicly, only available through the Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 19 security fixes[48] Java SE 5 Update 85 2015-04-14 Not available publicly, only available through the Java SE 5 Update 85 2015-04-14 Not available publicly, only available through the Java SE 5 Update 85 2015-04-14 Not available publicly, only available through the Java SE 5 Update 85 2015-04-14 Not available publicly, only available publicly, only available through the Java SE 5 Update 85 2015-04-14 Not available publicly, only available publicly, only available publicly, only available through the Java SE 5 Update 85 2015-04-14 Not available publicly, only availa
fixes[49] Java SE 6 Java SE 6 Java SE 6 Codename Mustang Released November 11, 2006; 14 years ago (2006-11-11) End of public support February 2013 (2013-02) Codename Mustang As of the version released on December 11, 2006, Sun replaced the name "J2SE" with Java SE and dropped the ".0" from the version number.[50] Internal numbering for
developers remains 1.6.0.[51] This version was developed under JSR 270. During the development phase, new builds including enhancements and bug fixes were released in February and June 2006, leading up to a final release that occurred on December 11, 2006. Major changes included in this
version:[52][53] Support for older Win9x versions dropped; unofficially, Java 6 Update 7 was the last release of Java shown to work on these versions dropped; unofficially, Java 6 Update 7 was the last release of Java shown to work on these versions of Windows.[citation needed] This is believed[by whom?] to be due to the major changes,
and built-in Mozilla JavaScript Rhino integration. Dramatic performance improvements for the core platform, [54][55] and Swing. Improved Web Service support through JAX-WS (JSR 224). JDBC 4.0 support (JSR 221). Java Compiler API (JSR 199): an API allowing a Java program to select and invoke a Java Compiler programmatically. Upgrade of JAXB
to version 2.0: Including integration of a StAX parser. Support for pluggable annotations (JSR 269).[56] Many GUI improvements, such as integration of SwingWorker in the API, table sorting and filtering, and true Swing double-buffering (eliminating the gray-area effect). JVM improvements include: synchronization and compiler performance
optimizations, new algorithms and upgrades to existing garbage collection algorithms, and application start-up performance. Java 6 can be installed to Mac OS X 10.5 (Leopard) running on 64-bit (Core 2 Duo and higher) processor machines. [57] Java 6 is also supported by both 32-bit and 64-bit machines running Mac OS X 10.6 (Snow Leopard). Java 6
reached the end of its supported life in February 2013, at which time all public updates, including security updates, were scheduled to be stopped. [58][59] Oracle released two more updates to Java 6 in March and April 2013, which patched some security vulnerabilities. [60][61] Java 6 updates After Java 6 release, Sun, and later Oracle, released
several updates which, while not changing any public API, enhanced end-user usability or fixed bugs. [62] Table of Java 6 updates Release Rele
stability. JConsole is now officially supported. Java SE 6 Update 2 2007-10-03 Java SE 6 Update 
TrustCenter are now included. Java SE 6 Update 6 2008-04-16 A workaround for the infamous Xlib/XCB locking assertion issue was introduced. A memory leak when using Kerberos authentication with LoginContext was fixed. Several other bugs were fixed. Java SE 6 Update 7 (1.6.0.7) is the last version of Java
that was shown to be working on the Win9x family of operating systems[citation needed] Java SE 6 Update 10[64] 2008-10-15 HotSpot VM 11. Major changes for this update include: Java Kernel, a small installer including only that was shown to be working on the Win9x family of operating systems[citation needed] Java Kernel, a small installer including only that was shown to be working on the Win9x family of operating systems[citation needed] Java Kernel, a small installer including only that was shown to be working on the Win9x family of operating systems[citation needed] Java Kernel, a small installer including only that was shown to be working on the Win9x family of operating systems[citation needed] Java Kernel, a small installer including only that was shown to be working on the Win9x family of operating systems[citation needed] Java Kernel, a small installer including only that was shown to be working on the Win9x family of operating systems[citation needed] Java Kernel, a small installer including only that was shown to be working on the Win9x family of operating systems[citation needed] Java Kernel, a small installer including only that was shown to be working on the Win9x family of operating systems[citation needed] Java Kernel, a small installer includes the working of the Win9x family of operating systems and the working of the 
the most commonly used JRE classes. Other packages are downloaded when needed. Enhanced updater. Enhanced versioning and pack200 support is no longer required. [64] Java Quick Starter, to improve cold start-up time. Improved performance of Java2D graphics primitives on Windows, using Direct3D and hardware
acceleration. A new Swing look and feel called Nimbus and based on synth.[65] Next-Generation Java Plug-In: applets now run in a separate process and support many features of Web Start applications.[64] Java SE 6 Update 11[66] 2008-12-12 No security fixes; 64-bit Java plug-in (for 64-bit Java plug-in).
web browsers only); Windows Server 2008 support; performance improvements of graphics and JavaFX applications Java SE 6 Update 13[69] 2009-03-24 7 security fixes, JNDI store and retrieve Java objects in LDAP slightly modified, JMX Change (createMBeanunregisterMBean), 4 new root certificates added Java SE 6 Update 14[70] 2009-05-28
HotSpot VM 14. This release includes extensive performance updates to the JIT compiler, compressed pointers for 64-bit machines, as well as support for the G1 (Garbage First) low-pause garbage collector.[71][72] The -XX:+DoEscapeAnalysis option directs the HotSpot JIT compiler to use escape analysis to determine whether local objects can be
allocated on the stack instead of the heap.[73] Some developers have noticed an issue introduced in this release which causes debuggers to miss breakpoints seemingly randomly.[74] Sun has a corresponding bug, which is tracking the issue. The workaround applies to the Client and Server VMs.[75] Using the -XX:+UseParallelGC option will prevent
the failure. Another workaround is to roll back to update 13, or to upgrade to update 16. Java SE 6 Update 15 2009-08-04 Introduced in update 14 which caused debuggers to miss breakpoints[77] Java SE 6 Update 17[78] 2009-11-04 Security fixes; two new
root certificates Java SE 6 Update 18[79] 2010-01-13 No security fixes; Hotspot VM 16; support for Ubuntu 8.04 LTS Desktop Edition, SLES 11, Windows 7, Red Hat Enterprise Linux 5.3, Firefox 3.6, VisualVM 1.2; updated Java DB; many performance improvements Java SE 6 Update 19[80] 2010-03-30 Security fixes; root certificate changes: seven
new, three removed, five replaced with stronger signature algorithms; interim fix for TLS renegotiation attack Java SE 6 Update 20[81] 2010-04-15 2 security fixes; Hotspot VM 17; support for Red Hat Enterprise Linux 4.8, 5.4, 5.5; Google Chrome 4 support; fixes; Hotspot VM 17; support for Red Hat Enterprise Linux 4.8, 5.4, 5.5; Google Chrome 4 support; fixes; Hotspot VM 17; support for Red Hat Enterprise Linux 4.8, 5.4, 5.5; Google Chrome 4 support; fixes; Hotspot VM 17; support for Red Hat Enterprise Linux 4.8, 5.4, 5.5; Google Chrome 4 support; fixes; Hotspot VM 17; support for Red Hat Enterprise Linux 4.8, 5.4, 5.5; Google Chrome 4 support; fixes; Hotspot VM 17; support for Red Hat Enterprise Linux 4.8, 5.4, 5.5; Google Chrome 4 support; fixes; Hotspot VM 17; support for Red Hat Enterprise Linux 4.8, 5.4, 5.5; Google Chrome 4 support; fixes; Hotspot VM 17; support for Red Hat Enterprise Linux 4.8, 5.4, 5.5; Google Chrome 4 support; fixes; Hotspot VM 17; support for Red Hat Enterprise Linux 4.8, 5.4, 5.5; Google Chrome 4 support; fixes; Hotspot VM 17; support for Red Hat Enterprise Linux 4.8, 5.4, 5.5; Google Chrome 4 support; fixes; Hotspot VM 17; support for Red Hat Enterprise Linux 4.8, 5.4, 5.5; Google Chrome 4 support; fixes; Hotspot VM 17; support for Red Hat Enterprise Linux 4.8, 5.4, 5.5; Google Chrome 4 support; fixes; Hotspot VM 17; support for Red Hat Enterprise Linux 4.8, 5.4, 5.5; Google Chrome 4 support; fixes; Hotspot VM 17; support for Red Hat Enterprise Linux 4.8, 5.4, 5.5; Google Chrome 4 support; fixes; Hotspot VM 17; support for Red Hat Enterprise Linux 4.8, 5.4, 5.5; Google Chrome 4 support; fixes; Hotspot VM 17; support for Red Hat Enterprise Linux 4.8, 5.4, 5.5; Google Chrome 4 support; fixes; Hotspot VM 17; support for Red Hat Enterprise Linux 4.8, 5.4, 5.5; Google Chrome 4 support; fixes; Hotspot VM 18; fixes; H
support for Customized Loading Progress Indicators; VisualVM 1.2.2 Java SE 6 Update 22[83] 2010-12-08 No security fixes; Hotspot VM 19; better support for right-to-left languages Java SE 6 Update 23[84] 2010-12-08 No security fixes; updated Java DB Java SE 6 Update 25
2011-03-21 No security fixes; Hotspot VM 20; support for Internet Explorer 9, Firefox 4 and Chrome 10; improved BigDecimal; includes "tiered" compilation in the Server VM that enabled by specifying -server and -XX:+TieredCompilation
command options)[86] Java SE 6 Update 26[87] 2011-06-07 17 new security fixes; [88] last version compatible with Windows Vista SP1 Java SE 6 Update 29[90] 2011-10-18 20 security fixes, various bug fixes[91] Java SE 6 Update 30[92] 2011-12-12 No security fixes; fixes; fixes; fixes fixes for the security fixes for the sec
for SSL regression in Update 29; support for Red Hat Enterprise Linux 6 Java SE 6 Update 31[93] 2012-04-26 No security fixes, improved VM configuration files, improved VM configuration files.
loading Java SE 6 Update 34[97] 2012-08-14 No security fixes, various bug fixes Java SE 6 Update 35[98] 2012-08-30 Contains a security-in-depth fix[99] Java SE 6 Update 37[100] 2013-02-01 50 security fixes Java SE 6 Update 37[100] 2012-10-16 30 security fixes Java SE 6 Update 38[101] 2012-10-16 30 security fixes Java SE 6 Update 37[100] 2012-10-16 30 security fixes Java SE 6 Update 37[100] 2012-10-16 30 security fixes Java SE 6 Update 37[100] 2012-10-16 30 security fixes Java SE 6 Update 37[100] 2012-10-16 30 security fixes Java SE 6 Update 37[100] 2012-10-16 30 security fixes Java SE 6 Update 37[100] 2012-10-16 30 security fixes Java SE 6 Update 37[100] 2012-10-16 30 security fixes Java SE 6 Update 37[100] 2012-10-16 30 security fixes Java SE 6 Update 37[100] 2012-10-16 30 security fixes Java SE 6 Update 37[100] 2012-10-16 30 security fixes Java SE 6 Update 37[100] 2012-10-16 30 security fixes Java SE 6 Update 37[100] 2012-10-16 30 security fixes Java SE 6 Update 37[100] 2012-10-16 30 security fixes Java SE 6 Update 37[100] 2012-10-16 30 security fixes Java SE 6 Update 37[100] 2012-10-16 30 security fixes Java SE 6 Update 37[100] 2012-10-16 30 security fixes Java SE 6 Update 37[100] 2012-10-16 30 security fixes Java SE 6 Update 37[100] 2012-10-16 30 security fixes Java SE 6 Update 37[100] 2012-10-16 30 security fixes Java SE 6 Update 37[100] 2012-10-16 30 security fixes Java SE 6 Update 37[100] 2012-10-16 30 security fixes Java SE 6 Update 37[100] 2012-10-16 30 security fixes Java SE 6 Update 37[100] 2012-10-16 30 security fixes Java SE 6 Update 37[100] 2012-10-16 30 security fixes Java SE 6 Update 37[100] 2012-10-16 30 security fixes Java SE 6 Update 37[100] 2012-10-16 30 security fixes Java SE 6 Update 37[100] 2012-10-16 30 security fixes Java SE 6 Update 37[100] 2012-10-16 30 security fixes Java SE 6 Update 37[100] 2012-10-16 30 security fixes Java SE 6 Update 37[100] 2012-10-16 30 security fixes Java SE 6 Update 37[100] 2012-10-16 30 security fixes Java SE 6 Update 37[100] 2012-10-16 30 security fixes Java
2013-02-19 5 security fixes Java SE 6 Update 43[105] 2013-03-04 2 security fixes Java SE 6 Update 45[106] 2013-06-18 Not available publicly, only available through the Java SE Support program and in Apple Update for OS X Snow Leopard,
Lion & Mountain Lion; up to 40 security fixes[110] Java SE 6 Update 65[111] 2013-10-15 Not available for OS X Snow Leopard, Lion & Mountain Lion; at least 11 critical security fixes[112] Java SE 6 Update 71[113] 2014-01-14 Not available for public download; 33
fixes[114] Java SE 6 Update 75[115] 2014-04-15 Not available publicly, only available through the Java SE Support program and in Solaris 10's Recommended Patchset Cluster no. #54; 25 security fixes[116] Java SE 6 Update 81[117] 2014-07-15 Not available publicly, only available through the Java SE Support program and in Solaris 10's
Recommended Patchset Cluster; 11 security fixes[118] Java SE 6 Update 85[119] 2014-10-16 Not available publicly, only available through the Java SE 6 Update 91[121] 2015-01-21 Linux x64 and Windows i586 versions are available as the Java SE 6
Reference Implementation.[122] Other versions are only available through the Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 14 security fixes[123] Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 14 security fixes[123] Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 14 security fixes[123] Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 14 security fixes[123] Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 15 security fixes[123] Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 16 security fixes[123] Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 16 security fixes[123] Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 18 security fixes[123] Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 19 security fixes[123] Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 19 security fixes[123] Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 19 security fixes[123] Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 19 security fixes[123] Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 10 security fixes[123] Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 10 security fixes[123] Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 10 security fixes[123] Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 10 security fixes[123] Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 10 security fixes[123] Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 10 security fixes[123] Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 10 security fixes[123] Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 10 security fixes[123] Java SE Support program and i
fixes[124] Java SE 6 Update 101 2015-07-15 Not available publicly, only available through the Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 18 security fixes[125] Certification for IE 10 and 11 was introduced in 1.6.0_101 Java SE 6 Update 105 2015-10-20 Not available publicly, only available through the Java SE
Support program and in Solaris 10's Recommended Patchset Cluster; 17 security fixes[126] Java SE 6 Update 111 2016-01-20 Not available publicly, only available publicly, o
through the Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 1 security fix[128] Java SE 6 Update 121 2016-07-19 Not available publicly, only available publicly, only available publicly, only available publicly, only available publicly.
only available through the Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 13 security fixes[131] Java SE 6 Update 141 2017-01-17 Not
available publicly, only available through the Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 10 security fixes[133] Java SE 6 Update 151 2017-04-18 Not available through the Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 10 security fixes[133] Java SE 6 Update 151 2017-04-18 Not available through the Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 10 security fixes[133] Java SE 6 Update 151 2017-04-18 Not available through the Java SE 6 Update 151 2017-04-18 Not available through the Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 10 security fixes[133] Java SE 6 Update 151 2017-04-18 Not available through the Java SE 6 Update 151 2017-04-18 Not available through the Java SE 6 Update 151 2017-04-18 Not available through the Java SE 8 Update 151 2017-04-18 Not available through the Java SE 8 Update 151 2017-04-18 Not available through the Java SE 8 Update 151 2017-04-18 Not available through the Java SE 8 Update 151 2017-04-18 Not available through the Java SE 8 Update 151 2017-04-18 Not available through the Java SE 8 Update 151 2017-04-18 Not available through the Java SE 8 Update 151 2017-04-18 Not available through the Java SE 8 Update 151 2017-04-18 Not available through the Java SE 8 Update 151 2017-04-18 Not available through the Java SE 8 Update 151 2017-04-18 Not available through the Java SE 8 Update 151 2017-04-18 Not available through the Java SE 8 Update 151 2017-04-18 Not available through the Java SE 8 Update 151 2017-04-18 Not available through the Java SE 8 Update 151 2017-04-18 Not available through the Java SE 8 Update 151 2017-04-18 Not available through the Java SE 8 Update 151 2017-04-18 Not available through the Java SE 8 Update 151 2017-04-18 Not available through the Java SE 8 Update 151 2017-04-18 Not available through the Java SE 8 Update 151 2017-04-18 Not available through the Java SE 8 Update 151 2017-04-18 Not available through through the Java SE 8 Update 151 2017-04-18 Not a
2017-07-18 Not available publicly, only available through the Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 5 security fixes[134] Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 7 security fixes[135] Java SE
6 Update 181 2018-01-16 Not available publicly, only available through the Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 12 security fixes[136] Java SE 6 Update 191 2018-04-17 Not available through the Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 7 security
fixes[137] Java SE 6 Update 201 2018-07-17 Not available publicly, only available through the Java SE Support program and in Solaris 10's Recommended Patchset
Cluster; 8 security fixes[139] Java SE 7 Java 
The development period was organized into thirteen milestones; on June 6, 2011, the last of the thirteen milestones was finished.[142][143] On average, 8 builds (which generally included enhancements and bug fixes) were released per milestone. The feature list at the OpenJDK 7 project lists many of the changes. Additions in Java 7 include:[144]
JVM support for dynamic languages, with the new invokedynamic bytecode under JSR-292,[145] following the prototyping work currently done on the Multi Language Virtual Machine Compressed 64-bit pointers[146] (available in Java 6 with -XX:+UseCompressedOops)[147] These small language changes (grouped under a project named Coin):[148]
 Strings in switch[149] Automatic resource management in try-statement[150] Improved type inference for generic instance creation, aka the diamond operator [151] Simplified varargs method declaration[152] Binary integer literals[153] Allowing underscores in numeric literals[154] Catching multiple exception types and rethrowing exceptions with
 improved type checking[155] Concurrency utilities under JSR 166[156] New file I/O library (defined by JSR 203) adding support for multiple file systems, file metadata and symbolic links. The new packages are java.nio.file.attribute and java.nio.file.attribute and java.nio.file.attribute and java.nio.file.attribute and symbolic links. The new packages are java.nio.file.attribute and java.nio.file.attribute and java.nio.file.attribute and java.nio.file.attribute and symbolic links.
Library-level support for elliptic curve cryptography algorithms An XRender pipeline for Java 2D, which improves handling of features originally implemented in version 6u10 as unsupported APIs[159] Enhanced library-level support for new network protocols, including SCTP and
Sockets Direct Protocol Upstream updates to XML and Unicode Java deployment rule sets[160] Lambda (Java's implementation of lambda functions), Jigsaw (Java's implementations)
version to download on java.com from April 2012 until Java 8 was released. [163] Java 7 updates Oracle issued public updates to the Java 7 family on a quarterly basis [164] until April 2015 when the product reached the end of its public availability. [165] Further updates for JDK 7, which are scheduled to continue until Jul 2022, are only made available
to customers with a support contract.[166] Table of Java 7 updates Release Release Release Release Release; HotSpot VM 21 Java SE 7 Update 2[169] 2011-12-12 No security fixes; HotSpot VM 22; reliability and performance improvements; support
for Solaris 11 and Firefox 5 and later; Java SE 7 Update 3[170] 2012-04-26 No security fixes[171] Java SE 7 Update 4[172] 2012-06-12 14 security fixes[174] Java SE 7 Update 3[170] 2012-04-26 No security fixes[174] Java SE 7 Update 3[170] 2012-04-26 No security fixes[170] 2012-0
Update 6[175] 2012-08-14 JavaFX and Java Access Bridge included in Java SE JDK and JRE support for Linux, JDK and JRE suppor
security vulnerabilities fixes[179] Java SE 7 Update 10[180] 2012-12-11 New security features, such as the ability to disable any Java application from running in the browser and new dialogs to warn you when the JRE is insecure, and bug fixes Java SE 7 Update 11[181] 2013-01-13 Olson Data 2012i; bugfix for problems with registration of plugin on
systems with Stand-alone version of JavaFX Installed, security fixes for CVE-2013-0422;[182] the default security fixes Java SE 7 Update 13[183] 2013-02-01 50 security fixes Java SE 7 Update 15[184] 2013-02-19 5 security fixes Java SE 7 Update 17[185] 2013-02-01 50 security fixes Java SE 7 Update 15[184] 2013-02-19 5 security fixes Java SE 7 Update 17[185] 2013-02-01 50 security fixes Java SE 7 Update 15[184] 2013-02-19 5 security fixes Java SE 7 Update 17[185] 2013-02-01 50 security fixes Java SE 7 Update 15[184] 2013-02-19 5 security fixes Java SE 7 Update 17[185] 2013-02-01 50 security fixes Java SE 7 Update 17[185] 2013-02-01 50 security fixes Java SE 7 Update 17[185] 2013-02-01 50 security fixes Java SE 7 Update 17[185] 2013-02-01 50 security fixes Java SE 7 Update 17[185] 2013-02-01 50 security fixes Java SE 7 Update 17[185] 2013-02-01 50 security fixes Java SE 7 Update 17[185] 2013-02-01 50 security fixes Java SE 7 Update 17[185] 2013-02-01 50 security fixes Java SE 7 Update 17[185] 2013-02-01 50 security fixes Java SE 7 Update 17[185] 2013-02-01 50 security fixes Java SE 7 Update 17[185] 2013-02-01 50 security fixes Java SE 7 Update 17[185] 2013-02-01 50 security fixes Java SE 7 Update 17[185] 2013-02-01 50 security fixes Java SE 7 Update 17[185] 2013-02-01 50 security fixes Java SE 7 Update 17[185] 2013-02-01 50 security fixes Java SE 7 Update 17[185] 2013-02-01 50 security fixes Java SE 7 Update 17[185] 2013-02-01 50 security fixes Java SE 7 Update 17[185] 2013-02-01 50 security fixes Java SE 7 Update 17[185] 2013-02-01 50 security fixes Java SE 7 Update 17[185] 2013-02-01 50 security fixes Java SE 7 Update 17[185] 2013-02-01 50 security fixes Java SE 7 Update 17[185] 2013-02-01 50 security fixes Java SE 7 Update 17[185] 2013-02-01 50 security fixes Java SE 7 Update 17[185] 2013-02-01 50 security fixes Java SE 7 Update 17[185] 2013-02-01 50 security fixes Java SE 7 Update 17[185] 2013-02-01 50 security fixes Java SE 7 Update 17[185] 2013-02-01 50 security fixes Java SE 7 Update 17[185] 2013-02-01 50 s
03-04 2 security fixes Java SE 7 Update 21[186] 2013-04-16 Multiple changes including 42 security fixes, a new Server JRE that doesn't include the plug-in, and the JDK for Linux on ARM Java SE 7 Update 25[187] 2013-06-18 Multiple changes including 40 security fixes [110][188] Java SE 7 Update 40[189] 2013-09-10 621 bug fixes, [190] New security
features, hardfloat ARM, Java Mission Control 5.2 and Retina Display support[191] Java SE 7 Update 45[192] 2013-10-15 51 security fixes; block JAVA changes; TimeZone.setDefault change Java SE 7 Update 51[193] 2014-01-14 36 security fixes; block JAVA
 applets without manifest (like Remote console - Java Applet - IBM IMM card, HP iLO card) even if warning dialog is with sentence "will be blocked in next version",[194][195] 17 bug fixes,[116] 19 bug fixes,[116] 19 bug fixes,[117] Java SE 7 Update 60[198] 2014-05-28 Java Mission Control 5.3,[199] 130 bug
 fixes[200] Java SE 7 Update 65[201] 2014-07-15 18 bug fixes[202] Java SE 7 Update 67[203] 2014-08-04 1 bug fixes[208] Java SE 7 Update 72[206] 2014-10-14 Same release date with Update 71 as a corresponding Patch Set Update (PSU) for Java SE 7,[207] 36 bug fixes[208] Java SE 7 Update 72 Update 72 Update 72 Update 72 Update 72 Update 72 Update 73 Update 74 Update 74 Update 74 Update 75 Update 75 Update 75 Update 77 Update 76 Update 77 Update 77 Update 77 Update 77 Update 78 Update 79 Update 79
75[209] 2015-01-20 12 bug fixes,[210] SSLv3 disabled by default Java SE 7 Update 76[211] 2015-04-14 21 security fixes, 6 bug fixes,[214] Java SE 7 Update 76[211] 2015-04-14 Last public release
of Java 7; same release date with Update 79 as a corresponding Patch Set Update (PSU) for Java SE 7 Update 85 2015-07-15 Not available through the Java SE 8 Support program and in Solaris 10's Recommended Patchset Cluster; 25 security fixes[217] Java SE 7 Update 91 2015-10-20 Not available
publicly, only available through the Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 20 security fixes[218] Java SE 7 Update 97 2016-02-05
Not available publicly, only available through the Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 1 security fix[220] Java SE 7 Update 101
2016-04-18 Not available publicly, only available through the Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 36 security fixes[130] Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 36 security fixes[130] Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 36 security fixes[130] Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 36 security fixes[130] Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 36 security fixes[130] Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 36 security fixes[130] Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 36 security fixes[130] Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 36 security fixes[130] Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 36 security fixes[130] Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 36 security fixes[130] Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 36 security fixes[130] Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 36 security fixes[130] Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 36 security fixes[130] Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 36 security fixes[130] Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 36 security fixes[130] Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 37 security fixes[130] Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 37 security fixes[130] Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 38 security fixes[130] Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 38 security fixes[130] Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 38 security fixes[130] Java SE Support program and in Solaris 10's 
SE 7 Update 121 2016-10-18 Not available publicly, only available through the Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 32 security fixes[131] Java SE 7 Update 131 2017-01-17 Not available publicly, only available through the Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 34
security fixes[132] Java SE 7 Update 141 2017-04-18 Not available publicly, only available through the Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 8 security fixes[222] Java SE 7 Update 151 2017-07-18 Not available publicly, only available through the Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 8 security fixes[222] Java SE 7 Update 151 2017-07-18 Not available publicly, only available through the Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 8 security fixes[222] Java SE 7 Update 151 2017-07-18 Not available publicly, only available through the Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 8 security fixes[222] Java SE 7 Update 151 2017-07-18 Not available publicly, only available through the Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 8 security fixes[222] Java SE 7 Update 151 2017-07-18 Not available publicly, only available through the Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 8 security fixes[222] Java SE 8 Update 151 2017-07-18 Not available publicly, only available through the Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 8 security fixes[222] Java SE 9 Update 151 2017-07-18 Not available publicly, only available through the Java SE 8 Update 151 2017-07-18 Not available publicly fixes[222] Java SE 9 Update 151 2017-07-18 Not available publicly fixes[222] Java SE 9 Update 151 2017-07-18 Not available publicly fixes[222] Java SE 9 Update 151 2017-07-18 Not available publicly fixes[222] Java SE 9 Update 151 2017-07-18 Not available publicly fixes[222] Java SE 9 Update 151 2017-07-18 Not available publicly fixes[222] Java SE 9 Update 151 2017-07-18 Not available publicly fixes[222] Java SE 9 Update 151 2017-07-18 Not available publicly fixes[222] Java SE 9 Update 151 2017-07-18 Not available publicly fixes[222] Java SE 9 Update 151 2017-07-18 Not available publicly fixes[222] Java SE 9 Update 151 2017-07-1
Patchset Cluster; 4 security fixes[134] Java SE 7 Update 161 2017-10-20 Not available publicly, only available through the Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 4 security fixes[135] Java SE 7 Update 171 2018-01-16 Not available publicly, only available through the Java SE Support program and in Solaris 10's
 Recommended Patchset Cluster; 51 security fixes[136] Java SE 7 Update 181 2018-04-17 Not available publicly, only available through the Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 12 security fixes[137] Java SE 7 Update 191 2018-07-17 Not available publicly, only available through the Java SE Support program
and in Solaris 10's Recommended Patchset Cluster; 9 security fixes[138] Java SE 7 Update 201 2018-10-18 Not available publicly, only available through the Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 13 security fixes[138] Java SE 7 Update 201 2018-10-18 Not available through the Java SE 5 Update 201 2018-10-18 Not available through the Java SE 7 Update 201 2018-10-18 Not available through the Java SE 7 Update 201 2018-10-18 Not available through the Java SE 7 Update 201 2018-10-18 Not available through the Java SE 7 Update 201 2018-10-18 Not available through the Java SE 8 Update 201 2018-10-18 Not available through the Java SE 8 Update 201 2018-10-18 Not available through the Java SE 8 Update 201 2018-10-18 Not available through the Java SE 8 Update 201 2018-10-18 Not available through the Java SE 8 Update 201 2018-10-18 Not available through the Java SE 8 Update 201 2018-10-18 Not available through the Java SE 8 Update 201 2018-10-18 Not available through the Java SE 8 Update 201 2018-10-18 Not available through the Java SE 8 Update 201 2018-10-18 Not available through the Java SE 8 Update 201 2018-10-18 Not available through the Java SE 8 Update 201 2018-10-18 Not available through the Java SE 8 Update 201 2018-10-18 Not available through the Java SE 8 Update 201 2018-10-18 Not available through the Java SE 8 Update 201 2018-10-18 Not available through the Java SE 8 Update 201 2018-10-18 Not available through the Java SE 8 Update 201 2018-10-18 Not available through the Java SE 8 Update 201 2018-10-18 Not available through the Java SE 8 Update 201 2018-10-18 Not available through the Java SE 8 Update 201 2018-10-18 Not available through the Java SE 8 Update 201 2018-10-18 Not available through the Java SE 8 Update 201 2018-10-18 Not available through the Java SE 8 Update 201 2018-10-18 Not available through the Java SE 8 Update 201 2018-10-18 Not available through the Java SE 8 Update 201 2018-10-18 Not available through the Java SE 8 Update 201 2018-10-18 Not available through 
Support program and in Solaris 10's Recommended Patchset Cluster; 5 security fixes[223] Java SE 7 Update 221 2019-07-16 Not available publicly, only available publicly, only available publicly, only available
through the Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 6 security fixes[225] Java SE 7 Update 251 2020-01-14 Not available through the Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 15 security fixes[226] Java SE 7 Update 251 2020-01-14 Not available through the Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 15 security fixes[226] Java SE 7 Update 251 2020-01-14 Not available through the Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 15 security fixes[226] Java SE 7 Update 251 2020-01-14 Not available through the Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 15 security fixes[226] Java SE 7 Update 251 2020-01-14 Not available through the Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 15 security fixes[226] Java SE 7 Update 251 2020-01-14 Not available through the Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 15 security fixes[226] Java SE 7 Update 251 2020-01-14 Not available through the Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 16 security fixes[226] Java SE 8 Update 251 2020-01-14 Not available through the Java SE 8 Update 251 2020-01-14 Not available through the Java SE 8 Update 251 2020-01-14 Not available through the Java SE 8 Update 251 2020-01-14 Not available through the Java SE 8 Update 251 2020-01-14 Not available through the Java SE 8 Update 251 2020-01-14 Not available through the Java SE 8 Update 251 2020-01-14 Not available through the Java SE 8 Update 251 2020-01-14 Not available through the Java SE 8 Update 251 2020-01-14 Not available through the Java SE 8 Update 251 2020-01-14 Not available through the Java SE 8 Update 251 2020-01-14 Not available through through the Java SE 8 Update 251 2020-01-14 Not available through through the Java SE 8 Update 251 2020-01-14 Not available through through
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14 Not available publicly, only available through the Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 11 security fixes[230] Java SE 7 Update 281 2020-10-20 Not available through the Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 8 security fixes[230] Java SE 7 Update 281 2020-10-20 Not available through the Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 8 security fixes[230] Java SE 7 Update 281 2020-10-20 Not available through the Java SE 7 Update 281 2020-10-20 Not available through the Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 8 security fixes[230] Java SE 7 Update 281 2020-10-20 Not available through the Java SE 8 Update 281 2020-10-20 Not available through the Java SE 8 Update 281 2020-10-20 Not available through the Java SE 8 Update 281 2020-10-20 Not available through the Java SE 8 Update 281 2020-10-20 Not available through the Java SE 8 Update 281 2020-10-20 Not available through the Java SE 8 Update 281 2020-10-20 Not available through the Java SE 8 Update 281 2020-10-20 Not available through the Java SE 8 Update 281 2020-10-20 Not available through the Java SE 8 Update 281 2020-10-20 Not available through the Java SE 8 Update 281 2020-10-20 Not available through the Java SE 8 Update 281 2020-10-20 Not available through the Java SE 8 Update 281 2020-10-20 Not available through the Java SE 8 Update 281 2020-10-20 Not available through the Java SE 8 Update 281 2020-10-20 Not available through the Java SE 8 Update 281 2020-10-20 Not available through through the Java SE 8 Update 281 2020-10-20 Not available through through the Java SE 8 Update 281 2020-10-20 Not available through through the Java SE 8 Update 281 2020-10-20 Not available through throu
Update 291 2021-01-19 Not available publicly, only available through the Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 1 security fixes[231] Java SE 7 Update 301 2021-04-12 Not available publicly, only available through the Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 11 security fixes[231] Java SE 7 Update 301 2021-04-12 Not available publicly, only available through the Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 11 security fixes[231] Java SE 7 Update 301 2021-04-12 Not available publicly, only available through the Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 11 security fixes[231] Java SE 8 Update 301 2021-04-12 Not available publicly, only available through the Java SE Support program and in Solaris 10's Recommended Patchset Cluster; 11 security fixes[231] Java SE 9 Update 301 2021-04-12 Not available publicly, only available publicly, only available through the Java SE 8 Update 301 2021-04-12 Not available publicly, only available pub
fixes[232] Java SE 8 Java SE 8 Java SE 8 Java SE 8 Java SE 8LTS versionReleased on March 18, 2014, 7 years ago (2014-03-18) No. of JEPs Java 8 was released on March 18, 2014, [233] Work on features was organized in terms of JDK Enhancement Proposals (JEPs). [236] JSR 335, JEP 126:
Language-level support for lambda expressions; unofficially, lambda expressions; unofficially, closures) under Project Lambda[237] and default methods (virtual extension methods)[238][239][240] which allow the addition of methods to interfaces without breaking existing implementations. There was an ongoing debate in the Java community on
whether to add support for lambda expressions. [241][242] Sun later declared that lambda expressions would be included in Java and asked for community input to refine the feature. [243] Supporting lambda expressions also enables functional-style operations on streams of elements, such as MapReduce-inspired transformations on collections. Default
methods allow an author of an API to add new methods to an interface without breaking the old code using it. Although it was not their primary intent, [238] default methods also allow multiple inheritance of behavior (but not state). JSR 223, JEP 174: Project Nashorn, a JavaScript runtime which allows developers to embed JavaScript code within
applications JSR 308, JEP 104: Annotation on Java types[244] Unsigned integer arithmetic[245] JSR 337, JEP 120: Repeating annotations[246] JSR 310, JEP 153: Launch JavaFX applications (direct launching of JavaFX application JARs)[249] JEP 122: Remove the permanent
generation[250] Java 8 is not supported on Windows XP[251] but as of JDK 8 update 25, it can still be installed and run under XP by downloading archived zip format file and unzipping it for the executable. The last version of Java 8 could run on XP is update 251. But the its components
compatibility starts to break on unsupported OS in early build during Java 8 updates development. [citation needed] From October 2014, Java 8 was the default version to download (and then again the download replacing Java 8. Indefinitely
for Personal Users".[2] Java 8 updates Table of Java 8 updates Release Release Release Release Release Java SE 8 Update 5[254] 2014-07-15 Java Dependency Analysis Tool (jdeps); Java Control Panel option to disable
 sponsors; JAR file attribute - Entry-Point; JAXP processing limit property - maxElementDepth; 18 security bug fixes,[256] 15 bug fixes Java SE 8 Update 20[257] 2014-10-14 10 bug fixes Java SE 8 Update 31[260] 2015-01-19 26 bug fixes, [258] JMC 5.4, String deduplication (disabled by default) Java SE 8 Update 25[259] 2014-10-14 10 bug fixes Java SE 8 Update 31[260] 2015-01-19 26 bug fixes, [258] JMC 5.4, String deduplication (disabled by default) Java SE 8 Update 25[259] 2014-10-14 10 bug fixes Java SE 8 Update 31[260] 2015-01-19 26 bug fixes, [258] JMC 5.4, String deduplication (disabled by default) Java SE 8 Update 20[257] 2014-08-19 669 bug fixes, [258] JMC 5.4, String deduplication (disabled by default) Java SE 8 Update 20[257] 2014-08-19 669 bug fixes, [258] JMC 5.4, String deduplication (disabled by default) Java SE 8 Update 20[257] 2014-08-19 669 bug fixes, [258] JMC 5.4, String deduplication (disabled by default) Java SE 8 Update 20[257] 2014-08-19 669 bug fixes, [258] JMC 5.4, String deduplication (disabled by default) Java SE 8 Update 20[257] 2014-08-19 669 bug fixes, [258] JMC 5.4, String deduplication (disabled by default) Java SE 8 Update 20[257] 2014-08-19 669 bug fixes, [258] JMC 5.4, String deduplication (disabled by default) Java SE 8 Update 20[257] 2014-08-19 669 bug fixes, [258] JMC 5.4, String deduplication (disabled by default) Java SE 8 Update 20[257] 2014-08-19 60 bug fixes, [258] JMC 5.4, String deduplication (disabled by default) Java SE 8 Update 20[257] 2014-08-19 60 bug fixes, [258] JMC 5.4, String deduplication (disabled by default) Java SE 8 Update 20[257] 2014-08-19 60 bug fixes, [258] JMC 5.4, String deduplication (disabled by default) Java SE 8 Update 20[257] 2014-08-19 60 bug fixes, [258] 2014-08-19 60 bug 
SSLv3 (disabled by default) Java SE 8 Update 40[261] 2015-03-03 645 bug fixes, [262] Added the notion of "memory, high pressure" to help indicate how much of system's memory is still available (low pressure = high memory, high pressure = high memory) and SE 8 Update 40[261] 2015-04-14 13 bug fixes Java SE 8 Update 51[264] 2015-07-14 Added
support for native sandbox on Windows platforms (disabled by default); also, 25 security fixes, 14 bug fixes Java SE 8 Update 65[267] 2015-10-20 25 security fixes, 3 bug fixes Java SE 8 Update 65[267] 2015-11-16 15 bug fixes Java SE 8 Update 65[267] 2015-10-20 25 security fixes, 5 bug fixes Java SE 8 Update 65[267] 2015-10-20 25 security fixes, 3 bug fixes Java SE 8 Update 65[267] 2015-10-20 25 security fixes, 5 bug fixes Java SE 8 Update 65[267] 2015-10-20 25 security fixes, 3 bug fixes Java SE 8 Update 65[267] 2015-10-20 25 security fixes, 3 bug fixes Java SE 8 Update 65[267] 2015-10-20 25 security fixes, 3 bug fixes Java SE 8 Update 65[267] 2015-10-20 25 security fixes, 3 bug fixes Java SE 8 Update 65[267] 2015-10-20 25 security fixes, 3 bug fixes Java SE 8 Update 65[267] 2015-10-20 25 security fixes, 3 bug fixes Java SE 8 Update 65[267] 2015-10-20 25 security fixes, 3 bug fixes Java SE 8 Update 65[267] 2015-10-20 25 security fixes, 3 bug fixes Java SE 8 Update 65[267] 2015-10-20 25 security fixes, 3 bug fixes Java SE 8 Update 65[267] 2015-10-20 25 security fixes, 3 bug fixes Java SE 8 Update 65[267] 2015-10-20 25 security fixes, 3 bug fixes Java SE 8 Update 65[267] 2015-10-20 25 security fixes Java SE 8 Update 65[267] 2015-10-20 25 security fixes Java SE 8 Update 65[267] 2015-10-20 25 security fixes Java SE 8 Update 65[267] 2015-10-20 25 security fixes Java SE 8 Update 65[267] 2015-10-20 25 security fixes Java SE 8 Update 65[267] 2015-10-20 25 security fixes Java SE 8 Update 65[267] 2015-10-20 25 security fixes Java SE 8 Update 65[267] 2015-10-20 25 security fixes Java SE 8 Update 65[267] 2015-10-20 25 security fixes Java SE 8 Update 65[267] 2015-10-20 25 security fixes Java SE 8 Update 65[267] 2015-10-20 25 security fixes Java SE 8 Update 65[267] 2015-10-20 25 security fixes Java SE 8 Update 65[267] 2015-10-20 25 security fixes Java SE 8 Update 65[267] 2015-10-20 25 security fixes Java SE 8 Update 65[267] 2015-10-20 25 security fixes Java SE 8 Update 65[267] 2015-10-20 25 security fixes Java SE 8 Update 65
fixes[270] Java SE 8 Update 72 2016-01-19 8 security fix Java SE 8 Update 74[272] 2016-02-03 1 security fix Java SE 8 Update 74[272] 2016-02-03 1 security fix Java SE 8 Update 77[273] 2016-02-03 1 security fix Java SE 8 Update 74[272] 2016-02-03 1 security fix Java SE 8 Update 78[273] 2016-03-23 1 security fix Java SE 8 Update 78[273] 2016-02-03 1 security fix Java SE 8 Update 78[273] 2016-04-19 9 security fix Java SE 8 Update 78[273] 2016-03-23 1 security fix Java SE 8 Update 78[273] 2016-04-19 9 security fix Java SE 8 Update 78[273] 2016-04-19 9 security fix Java SE 8 Update 78[273] 2016-04-19 9 security fix Java SE 8 Update 78[273] 2016-04-19 9 security fix Java SE 8 Update 78[273] 2016-04-19 9 security fix Java SE 8 Update 78[273] 2016-04-19 9 security fix Java SE 8 Update 78[273] 2016-04-19 9 security fix Java SE 8 Update 78[273] 2016-04-19 9 security fix Java SE 8 Update 78[273] 2016-04-19 9 security fix Java SE 8 Update 78[273] 2016-04-19 9 security fix Java SE 8 Update 78[273] 2016-04-19 9 security fix Java SE 8 Update 78[273] 2016-04-19 9 security fix Java SE 8 Update 78[273] 2016-04-19 9 security fix Java SE 8 Update 78[273] 2016-04-19 9 security fix Java SE 8 Update 78[273] 2016-04-19 9 security fix Java SE 8 Update 78[273] 2016-04-19 9 security fix Java SE 8 Update 78[273] 2016-04-19 9 security fix Java SE 8 Update 78[273] 2016-04-19 9 security fix Java SE 8 Update 78[273] 2016-04-19 9 security fix Java SE 8 Update 78[273] 2016-04-19 9 security fix Java SE 8 Update 78[273] 2016-04-19 9 security fix Java SE 8 Update 78[273] 2016-04-19 9 security fix Java SE 8 Update 78[273] 2016-04-19 9 security fix Java SE 8 Update 78[273] 2016-04-19 9 security fix Java SE 8 Update 78[273] 2016-04-19 9 security fix Java SE 8 Update 78[273] 2016-04-19 9 security fix Java SE 8 Update 78[273] 2016-04-19 9 security fix Java SE 8 Update 78[273] 2016-04-19 9 security fix Java SE 8 Update 78[273] 2016-04-19 9 security fix Java SE 8 Update 78[273] 2016-04-19 9 security fix Java SE 8 Update 78[273] 2016-04-19 9 security fix 
Update 92[275] 2016-04-19 Security and bug fixes from 8u91, plus 76 additional bug fixes from 8u92, plus 9 additional bug fixes from 8u92, plus 9 additional bug fixes from 8u91, plus 76 additional bug fixes from 8u92, plus 9 additional bug fixes from 8u92, plus 9 additional bug fixes from 8u91, plus 76 additional bug fixes from 8u92, plus 9 additi
8u101, plus 118 additional bug fixes Java SE 8 Update 111[278] 2016-10-18 7 Security fixes and 9 bug fixes Java SE 8 Update 121[280] 2017-01-17 3 additional features, 5 changes, and 11 bug fixes over 8u112. Java SE 8 Update 131[281] 2017-04-18 4 changes
and 42 bug fixes (2 notable). Java SE 8 Update 141[282] 2017-07-18 Additional feature, 3 changes and 12 bug fixes from 8u141. Java SE 8 Update 151[284] 2017-10-17 22 Security fixes, 2 notes, 1 certificate revocation, 1 new feature, 6 changes and 24 bug fixes from 8u144. Java
SE 8 Update 152[285] 2017-10-17 Security fixes, 1 new feature, 1 change and 238 bug fixes from 8u151 (1 notable). Java SE 8 Update 162[287] 2018-01-16 Security fixes, 63 bug fixes. Java SE 8 Update 171[288] 2018-04-17 Security fixes, 3 new features, 9 changes and 1 bug fix from 8u151 (1 notable). Java SE 8 Update 162[287] 2018-01-16 21 Security fixes, 1 new features, 9 changes and 1 bug fix from 8u151 (1 notable). Java SE 8 Update 162[287] 2018-01-16 21 Security fixes, 1 new features, 9 changes and 1 bug fix from 8u151 (1 notable). Java SE 8 Update 162[287] 2018-01-16 21 Security fixes, 1 new features, 9 changes and 1 bug fix from 8u151 (1 notable). Java SE 8 Update 162[287] 2018-01-16 21 Security fixes, 1 new features, 9 changes and 1 bug fix from 8u151 (1 notable). Java SE 8 Update 162[287] 2018-01-16 21 Security fixes, 1 new features, 9 changes and 1 bug fix from 8u151 (1 notable). Java SE 8 Update 162[287] 2018-01-16 21 Security fixes, 1 new features, 9 changes and 1 bug fix from 8u151 (1 notable). Java SE 8 Update 162[287] 2018-01-16 21 Security fixes, 1 new features, 9 changes and 1 bug fix from 8u151 (1 notable). Java SE 8 Update 162[287] 2018-01-16 21 Security fixes, 1 new features, 9 changes and 1 bug fix from 8u151 (1 notable). Java SE 8 Update 162[287] 2018-01-16 21 Security fixes, 1 new features, 9 changes and 1 new featur
bug fixes. Java SE 8 Update 172[289] 2018-04-17 Security fixes, bug fixes, Java SE 8 Update 191[291] 2018-10-16 New features, changes, bug fixes. Java SE 8 Update 191[291] 2018-10-16 New features, changes, bug fixes. Java SE 8 Update 191[291] 2018-10-16 New features, changes, bug fixes. Java SE 8 Update 191[291] 2018-10-16 New features, changes, bug fixes. Java SE 8 Update 191[291] 2018-10-16 New features, changes, bug fixes. Java SE 8 Update 191[291] 2018-10-16 New features, changes, bug fixes. Java SE 8 Update 191[291] 2018-10-16 New features, changes, bug fixes. Java SE 8 Update 191[291] 2018-10-16 New features, changes, bug fixes. Java SE 8 Update 191[291] 2018-10-16 New features, changes, bug fixes. Java SE 8 Update 191[291] 2018-10-16 New features, changes, bug fixes. Java SE 8 Update 191[291] 2018-10-16 New features, changes, bug fixes. Java SE 8 Update 191[291] 2018-10-16 New features, changes, bug fixes. Java SE 8 Update 191[291] 2018-10-16 New features, changes, bug fixes. Java SE 8 Update 191[291] 2018-10-16 New features, changes, bug fixes. Java SE 8 Update 191[291] 2018-10-16 New features, changes, bug fixes. Java SE 8 Update 191[291] 2018-10-16 New features, changes, bug fixes. Java SE 8 Update 191[291] 2018-10-16 New features, changes, bug fixes. Java SE 8 Update 191[291] 2018-10-16 New features, changes, bug fixes. Java SE 8 Update 191[291] 2018-10-16 New features, changes, bug fixes. Java SE 8 Update 191[291] 2018-10-16 New features, changes, bug fixes. Java SE 8 Update 191[291] 2018-10-16 New features, changes, bug fixes. Java SE 8 Update 191[291] 2018-10-16 New features, changes, bug fixes. Java SE 8 Update 191[291] 2018-10-16 New features, changes, bug fixes. Java SE 8 Update 191[291] 2018-10-16 New features, changes, bug fixes. Java SE 8 Update 191[291] 2018-10-16 New features, changes, bug fixes. Java SE 8 Update 191[291] 2018-10-16 New features, changes, bug fixes. Java SE 8 Update 191[291] 2018-10-16 New features, changes, bug fixes. Java SE 8 Update 191[291] 2018-10-16 New features, cha
  teatures, changes, bug fixes. Java SE 8 Update 202[294] 2019-01-15 New features, changes, bug fixes. License Update 212[296] 2019-04-16 New features (e.g. 5 currency symbols, including for Bitcoin and "New Joseph Joseph
bug fixes. License Update. Java SE 8 Update 221[297] 2019-07-16 New features, changes, bug fixes. Java SE 8 Update 231[298] 2020-01-14 New features, changes, bug fixes. Java SE 8 Update 231[300] 2020-04-14 New features, changes, bug fixes. The last
version that was shown to be working on Windows XP unofficially. Java SE 8 Update 261[301] 2020-07-14 New features, changes, bug fixes. Java SE 8 Update 271[302] 2020-10-20 New features, changes, bug fixes. Java SE 8 Update 271[302] 2020-10-20 New features, changes, bug fixes. Java SE 8 Update 271[302] 2020-10-20 New features, changes, bug fixes. Java SE 8 Update 271[302] 2020-10-20 New features, changes, bug fixes. Java SE 8 Update 271[302] 2020-10-20 New features, changes, bug fixes. Java SE 8 Update 271[302] 2020-10-20 New features, changes, bug fixes. Java SE 8 Update 271[302] 2020-10-20 New features, changes, bug fixes. Java SE 8 Update 271[302] 2020-10-20 New features, changes, bug fixes. Java SE 8 Update 271[302] 2020-10-20 New features, changes, bug fixes. Java SE 8 Update 271[302] 2020-10-20 New features, changes, bug fixes. Java SE 8 Update 271[302] 2020-10-20 New features, changes, bug fixes. Java SE 8 Update 271[302] 2020-10-20 New features, changes, bug fixes. Java SE 8 Update 271[302] 2020-10-20 New features, changes, bug fixes. Java SE 8 Update 271[302] 2020-10-20 New features, changes, bug fixes. Java SE 8 Update 271[302] 2020-10-20 New features, changes, bug fixes. Java SE 8 Update 271[302] 2020-10-20 New features, changes, bug fixes. Java SE 8 Update 271[302] 2020-10-20 New features, changes, bug fixes.
bug fixes. Java SE 9 Java SE 9 ReleasedSeptember 21, 2017, 3 years ago (2017-09-21)No. of JEPs9 Java SE 9 was made available on September 21, 2017, 3 years ago (2017-09-21)No. of JEPs9 Java SE 9 was made available on September 21, 2017, 3 years ago (2017-09-21)No. of JEPs9 Java SE 9 was made available on September 21, 2017, 3 years ago (2017-09-21)No. of JEPs9 Java SE 9 was made available on September 21, 2017, 3 years ago (2017-09-21)No. of JEPs9 Java SE 9 was made available on September 21, 2017, 3 years ago (2017-09-21)No. of JEPs9 Java SE 9 was made available on September 21, 2017, 3 years ago (2017-09-21)No. of JEPs9 Java SE 9 was made available on September 21, 2017, 3 years ago (2017-09-21)No. of JEPs9 Java SE 9 was made available on September 21, 2017, 3 years ago (2017-09-21)No. of JEPs9 Java SE 9 was made available on September 21, 2017, 3 years ago (2017-09-21)No. of JEPs9 Java SE 9 was made available on September 21, 2017, 3 years ago (2017-09-21)No. of JEPs9 Java SE 9 was made available on September 21, 2017, 3 years ago (2017-09-21)No. of JEPs9 Java SE 9 was made available on September 21, 2017, 3 years ago (2017-09-21)No. of JEPs9 Java SE 9 was made available on September 21, 2017, 3 years ago (2017-09-21)No. of JEPs9 Java SE 9 was made available on September 21, 2017, 3 years ago (2017-09-21)No. of JEPs9 Java SE 9 was made available on September 21, 2017, 3 years ago (2017-09-21)No. of JEPs9 Java SE 9 was made available on September 21, 2017, 3 years ago (2017-09-21)No. of JEPs9 Java SE 9 was made available on September 21, 2017, 3 years ago (2017-09-21)No. of JEPs9 Java SE 9 was made available on September 21, 2017, 3 years ago (2017-09-21)No. of JEPs9 Java SE 9 was made available on September 21, 2017, 3 years ago (2017-09-21)No. of JEPs9 Java SE 9 was made available on September 21, 2017, 3 years ago (2017-09-21)No. of JEPs9 Java SE 9 was made available on September 21, 2017, 3 years ago (2017-09-21)No. of JEPs9 Java SE 9 was made available on September 21, 2017, 3 years ago (2017-09-21)No. o
critical technical questions. In the last days of June 2017, Java Community Process expressed nearly unanimous consensus on the proposed Module System)[162][avaDB was removed from JDK[308][EP 193: Variable handles: define a standard means
to invoke the equivalents of various java.util.concurrent.atomic and sun.misc.Unsafe operations[EP 213: Milling Project Coin: Allow @SafeVarargs on private instance methods; Allow diamond with anonymous classes if the argument type of the inferred type is
denotable; Complete the removal, begun in Java SE 8, of underscore from the set of legal identifier names; Support for private methods in interfaces for the Java language. [309] [EP 254: Compact Strings [EP 263: HiDPI graphics: automatic scaling and
sizing [EP 266: More concurrency updates: It includes a Java implementation of Reactive Streams [312] [EP 268: XML catalogs [EP 282: jlink: The Java Linker: create a tool that can assemble and optimize a set of modules and their dependencies
into a custom run-time image. It effectively allows to produce a fully usable executable including the JVM to run it JEP 295: Ahead-of-Time Compilation rovided by GraalVM. The first stable release of Java 9 was on September 21, 2017. [314] History At
JavaOne 2011, Oracle discussed features they hoped to release for Java 9 in 2016.[315] Java 9 should include better support for multi-gigabyte heaps, better native code integration, a different default garbage collector (G1, for "shorter response times")[316] and a self-tuning [VM.[317] In early 2016, the release of Java 9 was rescheduled for March
2017[318] and later again postponed four more months to July 2017.[319] Java 9 updates Release Release Release Release Java SE 9.0.4[322] 2018-01-16 Final release for JDK 9; January 2018 security fixes and critical bug fixes
Java SE 10 Java SE 10 Released March 20, 2018; 3 years ago (2018-03-20) No. of JEPs 12 OpenJDK 10 was released on March 20, 2018, with twelve new features confirmed. [323] Among these features were: JEP 286: Local-Variable Type Inference JEP 286: Local-Variable Type Inference JEP 296: Consolidate the JDK Forest into a Single Repository JEP 304: Garbage-Collector Interface JEP 307:
Parallel Full GC for G1JEP 310: Application Class-Data Sharing EP 312: Thread-Local Handshakes [EP 313: Remove the Native-Header Generation on Alternative Memory Devices [EP 317: Experimental Java-Based JIT Compiler EP 319: Root Certificates [EP 322: Thread-Local Handshakes [EP 316: Heap Allocation on Alternative Memory Devices [EP 317: Experimental Java-Based JIT Compiler S19: Root Certificates [EP 318: Root Certificates [EP 318: Root Certificates [EP 318: Additional Unicode Language Parallel Full GC for G1 [EP 319: Root Certificates [EP 318: Root Certif
Time-Based Release Versioning The first of these JEP 286 Local-Variable Type Inference, allows the var keyword to be used for local variables with the actual type calculated by the compiler. So we can do: var list = new ArrayList(); // infers ArrayList var stream = list.stream(); // infers ArrayList var stream(); // infers ArrayList var
10[324] 2018-03-20 Initial release Java SE 10.0.1[325] 2018-04-17 Security fixes, 5 bug fixes[326] Java SE 11.LTS versionReleased for JDK 10. Security fixes, 7 bug fixes[328] Java SE 11.1TS versionReleased for JDK 10. Security fixes, 7 bug fixes[328] Java SE 11.1TS versionReleased for JDK 11 was released on September 25, 2018 and the version
is currently open for bug fixes. It offers LTS, or Long Term Support. Among others, Java 11 includes a number of new features, such as:[329] JEP 181: Nest-Based Access ControlJEP 309: Dynamic Class-File Constants JEP 315: Improve Aarch64 Intrinsics JEP 318: Epsilon: A No-Op Garbage Collector JEP 320: Remove the Java EE and CORBA
ModulesJEP 321: HTTP Client (Standard)JEP 323: Local-Variable Syntax for Lambda ParametersJEP 324: Key Agreement with Curve25519 and Curve448JEP 327: Unicode 10JEP 328: Flight RecorderJEP 329: ChaCha20 and Poly1305 Cryptographic AlgorithmsJEP 330: Launch Single-File Source-Code ProgramsJEP 331: Low-Overhead Heap
ProfilingJEP 332: Transport Layer Security (TLS) 1.3JEP 333: ZGC: A Scalable Low-Latency Garbage Collector (Experimental)JEP 335: Deprecate the Pack200 Tools and API A number of features from previous releases were dropped; in particular, Java applets and Java Web Start are no longer
available, IavaFX, Iava EE and CORBA modules have been removed from IDK,[330] Iava 11 updates Release Iava SE 11.0.1[332] 2018-10-16 Security & bug fixes Iava SE 11.0.2[333] 2019-01-15 Security & bug fixes Iava SE 11.0.3[334] 2019-04-16 New
features, Security & bug fixes Java SE 11.0.4[335] 2019-07-16 New features, Security & bug fixes; HotSpot Windows OS Detection Correctly Identifies Windows Server 2019 Java SE 11.0.5[336] 2019-10-15 New features, Security & bug fixes Java SE 11.0.5[336] 2019-10-15 New features, Security & bug fixes Java SE 11.0.5[336] 2019-10-15 New features, Security & bug fixes Java SE 11.0.5[336] 2019-10-15 New features, Security & bug fixes Java SE 11.0.5[336] 2019-10-15 New features, Security & bug fixes Java SE 11.0.5[336] 2019-10-15 New features, Security & bug fixes Java SE 11.0.5[336] 2019-10-15 New features, Security & bug fixes Java SE 11.0.5[336] 2019-10-15 New features, Security & bug fixes Java SE 11.0.5[336] 2019-10-15 New features, Security & bug fixes Java SE 11.0.5[336] 2019-10-15 New features, Security & bug fixes Java SE 11.0.5[336] 2019-10-15 New features, Security & bug fixes Java SE 11.0.5[336] 2019-10-15 New features, Security & bug fixes Java SE 11.0.5[336] 2019-10-15 New features, Security & bug fixes Java SE 11.0.5[336] 2019-10-15 New features, Security & bug fixes Java SE 11.0.5[336] 2019-10-15 New features, Security & bug fixes Java SE 11.0.5[336] 2019-10-15 New features, Security & bug fixes Java SE 11.0.5[336] 2019-10-15 New features, Security & bug fixes Java SE 11.0.5[336] 2019-10-15 New features, Security & bug fixes Java SE 11.0.5[336] 2019-10-15 New features, Security & bug fixes Java SE 11.0.5[336] 2019-10-15 New features, Security & bug fixes Java SE 11.0.5[336] 2019-10-15 New features, Security & bug fixes Java SE 11.0.5[336] 2019-10-15 New features, Security & bug fixes Java SE 11.0.5[336] 2019-10-15 New features, Security & bug fixes Java SE 11.0.5[336] 2019-10-15 New features, Security & bug fixes Java SE 11.0.5[336] 2019-10-15 New features, Security & bug fixes Java SE 11.0.5[336] 2019-10-15 New features, Security & bug fixes Java SE 11.0.5[336] 2019-10-15 New features, Security & bug fixes Java SE 11.0.5[336] 2019-10-15 New features, Security & bug fixes Java SE 11.0.5[336] 2019-10-15
features, Security & bug fixes Java SE 11.0.8[339] 2020-07-14 New features, Security & bug fixes Java SE 11.0.10[341] 2021-01-19 New features, Security & bug fixes Java SE 11.0.12[343] 2021-07-20 New features, Security & bug fixes Java SE 11.0.10[341] 2021-07-20 New features, Security & bug fixes Java SE 11.0.10[341] 2021-07-20 New features, Security & bug fixes Java SE 11.0.10[341] 2021-07-20 New features, Security & bug fixes Java SE 11.0.10[341] 2021-07-20 New features, Security & bug fixes Java SE 11.0.10[341] 2021-07-20 New features, Security & bug fixes Java SE 11.0.10[341] 2021-07-20 New features, Security & bug fixes Java SE 11.0.10[341] 2021-07-20 New features, Security & bug fixes Java SE 11.0.10[341] 2021-07-20 New features, Security & bug fixes Java SE 11.0.10[341] 2021-07-20 New features, Security & bug fixes Java SE 11.0.10[341] 2021-07-20 New features, Security & bug fixes Java SE 11.0.10[341] 2021-07-20 New features, Security & bug fixes Java SE 11.0.10[341] 2021-07-20 New features, Security & bug fixes Java SE 11.0.10[341] 2021-07-20 New features, Security & bug fixes Java SE 11.0.10[341] 2021-07-20 New features, Security & bug fixes Java SE 11.0.10[341] 2021-07-20 New features, Security & bug fixes Java SE 11.0.10[341] 2021-07-20 New features, Security & bug fixes Java SE 11.0.10[341] 2021-07-20 New features, Security & bug fixes Java SE 11.0.10[341] 2021-07-20 New features, Security & bug fixes Java SE 11.0.10[341] 2021-07-20 New features, Security & bug fixes Java SE 11.0.10[341] 2021-07-20 New features, Security & bug fixes Java SE 11.0.10[341] 2021-07-20 New features, Security & bug fixes Java SE 11.0.10[341] 2021-07-20 New features, Security & bug fixes Java SE 11.0.10[341] 2021-07-20 New features, Security & bug fixes Java SE 11.0.10[341] 2021-07-20 New features, Security & bug fixes Java SE 11.0.10[341] 2021-07-20 New features, Security & bug fixes Java SE 11.0.10[341] 2021-07-20 New features, Security & bug fixes Java SE 11.0.10[341] 2021-07-20 New features, Security & bug fixes Java S
Security & bug fixes Java SE 12 Java SE 12 Java SE 12 Java SE 12 Released March 19, 2019; 2 years ago (2019-03-19)No. of JEPs8Preview features anumber of new features, such as:[344] JEP 189: Shenandoah: A Low-Pause-Time Garbage Collector (Experimental) JEP 230:
Microbenchmark SuiteJEP 325: Switch Expressions (Preview)JEP 346: Promptly Return Unused Committed Memory from G1 The preview feature Jep 325 extends the switch statement so it can also be used as an
expression, and adds a new form of case label where the right hand side is an expression. No break statement is needed. For complex expressions a yield statement can be used. This becomes standard in Java SE 14. int ndays = switch(month) { case JAN, MAR, MAY, JUL, AUG, OCT, DEC -> 31; case APR, JUN, SEP, NOV -> 30; case FEB -> { if (year
\% 400 ==0) yield 29; else if (year \% 100 == 0) yield 28; else if (year \% 4 ==0) yield 28; else yield 28; else if (year \% 4 ==0) yield 28; else if (year \% 4 ==0) yield 28; else if (year \% 4 ==0) yield 28; else yield 28; else if (year \% 4 ==0) yield 29; else if (year \% 4 ==0) yield 29; else yield 28; else yield 29; else
Java SE 13ReleasedSeptember 17, 2019; 23 months ago (2019-09-17)No. of JEPs5Preview featuresEnhanced switch statements, text blocks JDK 13 was released on September 17, 2019. Java 13 includes the following new featuresEnhanced switch statements, text blocks JDK 13 was released on September 17, 2019; 23 months ago (2019-09-17)No. of JEPs5Preview featuresEnhanced switch statements, text blocks JDK 13 was released on September 17, 2019. Java 13 includes the following new featuresEnhanced switch statements and thousands of bug fixes. [348] JEP 350: Dynamic CDS ArchivesJEP 351
ZGC: Uncommit Unused MemoryJEP 353: Reimplement the Legacy Socket APIJEP 354: Switch Expressions (Preview)JEP 355: Text Blocks (Preview) JEP 356: Text Bloc
13.0.1[350] 2019-10-15 Security & bug fixes Java SE 13.0.2[351] 2020-01-14 Security & bug fixes Java SE 14 Java SE 14 Java SE 14 Notable features Helpful NullPointer Exceptions, enhanced switch statements Notable removals Remove Concurrent Mark Sweep garbage collector Preview
featuresPattern matching for instanceof, records, text blocksIncubating featuresipackager, Foreign memory access [DK 14 was released on March 17, 2020. Java 14 includes the following new features, as well as "hundreds of smaller enhancements and thousands of bug fixes".[352] JEP 305: Pattern Matching for instanceof (Preview) JEP 343:
Packaging Tool (Incubator) JEP 345: NUMA-Aware Memory Allocation for G1JEP 349: JFR Event Streaming EP 352: Non-Volatile Mapped Byte Buffers JEP 361: Switch Expressions (Standard) JEP 362: Deprecate the Solaris and SPARC Ports JEP 363: Remove the Concurrent Mark Sweep and Section 1997.
(CMS) Garbage CollectorJEP 364: ZGC on macOSJEP 365: ZGC on WindowsJEP 366: Deprecate the ParallelScavenge + SerialOld GC CombinationJEP 367: Remove the Pack200 Tools and APIJEP 368: Text Blocks (Second Preview)JEP 370: Foreign-Memory Access API (Incubator) JEP 305, Pattern Matching for instanceof simplifies the common case of
an instanceof test being immediately followed by cast, replacing if (obj instanceof String) { String s = (String) obj; System.out.println(s.length()); } yeth if (obj instanceof String s) { System.out.println(s.length()); } yeth if (obj instanceof String s) { System.out.println(s.length()); } Point p = new
Point(3,4); System.out.println(p.x()); Java 14 updates Release Release
JEPs14Notable featuresHidden classes, ZGC (garbage collector), Shenandoah (garbage collector), text blocksNotable removalsJavaScript engine, Solaris and SPARC portsPreview featuresSealed classes, pattern matching of instanceof, recordsIncubating featuresForeign-memory access JDK 15 was released on September 15, 2020. Java 15 adds e.g.
support for multi-line string literals (aka Text Blocks). The Shenandoah and Z garbage collectors (latter sometimes abbreviated ZGC) are now ready for use in production (i.e. no longer marked experimental). Support for Oracle's Solaris operating system (and SPARC CPUs) is dropped (while still available in e.g. Java 11). The Nashorn JavaScript
Engine is removed. Also removed some root CA certificates. JEP 339: Edwards-Curve Digital Signature Algorithm (EdDSA)JEP 371: Hidden Classes (Preview)JEP 371: Hidden Classes (Preview)JEP 373: Remove the Nashorn JavaScript Engine JEP 374: Disable and Deprecate Biased Locking JEP 375: Pattern Locking JEP 375: Pattern Locking JEP 375: Pattern Locking JEP 376: Pattern Loc
Matching for instanceof (Second Preview)JEP 377: ZGC: A Scalable Low-Latency Garbage CollectorJEP 381: Remove the Solaris and SPARC PortsJEP 383: Foreign-Memory Access API (Second Incubator)JEP 384: Records (Second Preview)JEP 385: Deprecate RMI
Activation for Removal JEP 360 Sealed Classes and interfaces that restrict which other classes or interfaces may extend or implement them. Only those classes specified in a permits Circle, Rectangle, Square {...}
Together with records, sealed classes are Algebraic data types, records are product types and sealed classes are sum types. They work well with other recent features like records, switch expressions, and pattern matching for instance-of. They all form part of a system for "Pattern matching in Java" first discussed by Gavin Bierman and Brian Goetz, in
September 2018.[357] Java 15 updates Release Release Release Release Release Release Release Release Release Java SE 15.0.1[358] 2020-10-20 Security & bug fixes Java SE 16 Java SE 16 Java SE 16 Released March 16, 2021; 5 months ago (2021-03-16) No. of JEPs17 Notable
featuresWindows/AArch64 Port, jpackager, pattern matching for instanceof, recordsPreview featuresForeign linker, Foreign-memory access JDK 16 was released on March 16, 2021. Java 16 removes Ahead-of-Time compilation (and Graal JIT) options.[361] The Java implementation itself was and is still written in C++,
while as of Java 16, more recent C++14 (but still not e.g. C++17 or C++20) is allowed. The code was also moved to GitHub (dropping the Mercurial source control system). JEP 338: Vector API (Incubator) JEP 347: Enable C++14 Language Features JEP 357: Migrate from Mercurial to GitJEP 369: Migrate to GitHub JEP 376: ZGC: Concurrent Thread-
Stack Processing IEP 380: Unix-Domain Socket Channels IEP 386: Alpine Linux Port - not yet stable IEP 387: Elastic Metaspace IEP 388: Windows/AArch64 Port IEP 389: Foreign Linker API (Incubator) IEP 390: Warnings for Value-Based Classes IEP 389: Foreign Linker API (Incubator) IEP 389: 
for instanceof[EP 395: Records[EP 396: Strongly Encapsulate JDK Internals by Default[EP 397: Sealed Classes (Second Preview) Java SE 16.0.1[363] 2021-03-16 General Availability Release February (Second Preview) Java SE 16.0.1[363] 2021-03-16 General Availability Release February (Second Preview) Java SE 16.0.1[363] 2021-03-16 General Availability Release February (Second Preview) Java SE 16.0.1[363] 2021-03-16 General Availability Release February (Second Preview) Java SE 16.0.1[363] 2021-03-16 General Availability Release February (Second Preview) Java SE 16.0.1[363] 2021-03-16 General Availability Release February (Second Preview) Java SE 16.0.1[363] 2021-03-16 General Availability Release February (Second Preview) Java SE 16.0.1[363] 2021-03-16 General Availability Release February (Second Preview) Java SE 16.0.1[363] 2021-03-16 General Availability Release February (Second Preview) Java SE 16.0.1[363] 2021-03-16 General Availability Release February (Second Preview) Java SE 16.0.1[363] 2021-03-16 General Availability Release February (Second Preview) Java SE 16.0.1[363] 2021-03-16 General Availability Release February (Second Preview) Java SE 16.0.1[363] 2021-03-16 General Availability Release February (Second Preview) Java SE 16.0.1[363] 2021-03-16 General Availability (Second Preview) Java SE 16.0.1[363] 2021-03-16 General Avail
2021-07-20 Security & bug fixes Java SE 17 Java SE 17LTS versionReleasedSeptember 2021 (2021-09)No. of JEPs14Notable featuresSwitch pattern matchingIncubating featuresVector API, Foreign function & memory API JDK 17 is the next long-term support (LTS) release
now in Rampdown Phase Two,[365] due out in September 2021 if the current 6-month release cycles continue. Java 17 is expected to be the 2nd long-term support (LTS) release since switching to the new 6-month release cycles continue.
Number Generators JEP 382: New macOS Rendering Pipeline JEP 403: Strongly Encapsulate JDK Internals JEP 403: Remove the Experimental AOT and JIT Compiler JEP 411: Deprecate the Security
Manager for RemovalJEP 412: Foreign Function & Memory API (Incubator)JEP 414: Vector API (Second Incubator)JEP 415: Context-Specific Deserialization Filters Java SE 18 Java SE 18 Java SE 18 Java SE 18 Released March 2022 (2022-03)No. of
JEPsTBCNotable featuresTBCNotable featuresTBCIncubating featuresTB
features Project Valhalla: Value types, objects without identity but with an efficient memory layout. Project Panama: Improved interoperability with native code, to enable Java source code to call functions and use data types from other languages, in a way that is easier and has better performance than today. Project Loom: Virtual threads, a
lightweight user-mode scheduled alternative to standard OS managed threads. Virtual threads in a many-to-one relationship, in contrast to the many-to-one relationship, in contrast to the many-to-one relationship from the original green threads implementation in early versions of Java. Implementations The officially supported Java platform, first developed at Sun
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and now stewarded by Oracle, is Java SE. Releases are based on the OpenJDK project, which is a free and open source project with an open development model. Other Java implementations were created to offer some benefits over the standard

implementation, often the result of some area of academic or corporate-sponsored research. Many Linux distributions include builds of OpenJDK through the IcedTea project started by Red Hat, which provides an easier build and integration environment. Visual J++ and the Microsoft Java Virtual Machine were created as incompatible implementations. After the Sun v. Microsoft abandoned it and began work on the .NET platform. Other proprietary Java implementations are available, such as Azul's Zing; additionally, Azul offers certified open source OpenJDK, while Sun's implementation was still proprietary, the GNU Classpath project was created to provide a free and open source implementation of the Java platform. Since the release of JDK 7, when OpenJDK became the official reference implementation, the original motivation for the GNU Classpath project almost completely disappeared and its last release was in 2012. The Apache Harmony project was started shortly before the release of OpenJDK. After Sun's initial source code release, the Harmony project continued, working to provide an implementation under a lax license. Android incorporated parts of the Harmony project, supplemented with Google's own Dalvik virtual machine and ART. Apache Harmony has since been retired, and Google has switched its use of Harmony components with equivalent ones from OpenJDK. Both Jikes and Jikes RVM are open source research projects that were developed by IBM. Several other implementations exist that started as proprietary software but are now open source. IBM initially developed OpenJ9 as the proprietary J9,[369] but has since relicensed the project and donated it to the Eclipse Foundation. JRockit is a proprietary implementation that was acquired by Oracle and incorporated into subsequent OpenJDK versions. References ^ a b c d "Oracle Java SE Support Roadmap". www.oracle.com. ^ a b "Oracle Java SE Support Roadmap". 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